

# Commercial Air Conditioners and Heat Pumps

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## Screening Analysis

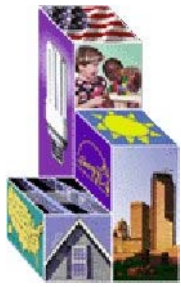
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Pacific Northwest National Laboratory

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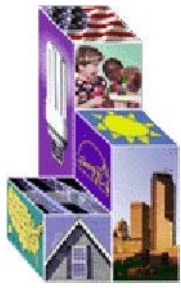


## Screening Analysis Overview

The Screening Analysis is used to eliminate from further analysis those options or efficiency levels that are not sufficiently developed or have characteristics that make them technologically unsuitable for consideration in the rulemaking.

*Final design options included must satisfy the following criteria:*

Technological feasibility	Practicability to manufacture, install, and service
Impacts on health or safety	Impacts on product utility or availability



## Screening Analysis

### DOE Requests for Stakeholder Input

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- *Should the Department consider other factors in developing its list of potential design options? For example, should increases in EER be limited by the latent heat removal capability of the equipment in order to make the product suitable for high humidity areas of the country?*
- *What assumptions should the Department make regarding design for specific capacities of equipment? How should the Department address capacity control measures?*
- *Are there other technology choices that should be added to those listed in the framework document*



# BACKUP SLIDES

## Screening Analysis



## Screening Analysis

### Initial Technology Choice Considerations

- Evaporator and condenser coils with larger heat-exchanger area \*
- “Deep coil” or micro-channel evaporator coils
- Low pressure-loss filters and cooling coils \*
- High efficiency motors \*
- High efficiency compressors, e.g. scrolls or “twin-single” technology \*
- Multiple compressors \*
- Inverter-driven, variable-speed compressors \*
- Thermal expansion valves (TXV) \*
- Electronic expansion valves
- Air-foil or backward-curved centrifugal fans \*
- Synchronous (toothed) belts or direct drive fans \*
- Inverter-driven, variable-speed indoor or condenser compressors
- High-efficiency propeller condenser fans
- High-side solenoid valve or discharge line check-valve to minimize pressure equalization
- Heat-pipes (for high latent loads) \*
- Double-skin, high-albedo cabinets \*
- Sub-coolers
- Demand-controlled ventilation strategy \*

\* Currently used in commercial unitary and/or split AC/HP products